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ABSTRACT

While the effects of teacher expectations on learner performance have continued to be of interest to both classroom teachers and researchers, the findings of much of the research have been equivocal. Teacher expectancy statements may affect performance in three rather distinct ways: the past association value of the expectancy statement, the value of the expectancy statement as a sign of approval or disapproval, and the novelty of the expectancy statement. The subjects were 43 eleventh-grade students with a past record of low achievement. These students had been assigned to a special reading program. The six subjects who were, in the opinion of the teacher, the most highly motivated were randomly assigned to each of the six treatment groups. The remaining subjects were then randomly assigned to one of the respective experimental treatment groups. Six treatment groups were formed from all possible combinations of three types of expectancy statements (high, neutral, or low) and two types of feedback, positive or negative. The results concerning how expectancy interacts with feedback in a low achieving group indicate that (1) when it is low, it stimulates effort by making a task seem difficult, and (2) when it is high, it reinforces effort if negative feedback is being received. One implication of these interpretations is that under conditions where a teacher's statements are not credible, expectancy will not have an effect (unless it has discriminative cue value that is independent of its surface meaning). (Author/JM)

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EXPECTANCY STATEMENTS IN MEANINGFUL CLASSROOM LEARNING

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While the effects of teacher expectations on learner performance have continued to be of interest to both classroom teachers and researchers, the findings of much of the research have been equivocal; for example, the failure of José and Cody (1971) to replicate the much quoted findings of the Rosenthal and Jacobson (1968) study. One of the more promising explanations given for the failure to obtain reliable results with respect to the use of teacher expectancy statements has been given by Moore, Gagné and Hauck (1972). Specifically, in an investigation using fourth-grade high-achieving high- and low-IQ students in which the interaction of teacher expectancy with both pupil type and feedback type was evaluated, it was found that while the main effects of teacher expectancy statements did not produce differences on variables such as performance, voluntary persistence, and attitude, the interaction effect did produce differences. It was concluded that "expectancy effects are moderated by both the child's past history and feedback being received at present. The failure of previous studies to obtain significant teacher expectancy effects on pupil performance may have been due to their failure to control for relevant moderating variables." Further, it was suggested that expectancy statements may affect performance in three rather distinct ways: first, "the past association value of the expectancy statement (cue function)," second, "the value of the expectancy statement as a sign of approval or disapproval

(reinforcement function)," and third, "the novelty of the expectancy statement (arousal function)."

The purpose of the present study was to test the major premises set forth by Moore et al. (1972) under another set of environmental conditions which included (1) a low-achieving low-IQ senior high school population and (2) meaningful learning materials in a natural classroom environment. In addition, the hypothesis that expectancy effects can be completely attributed to adult attention per se was tested by the inclusion of control groups that received verbal statements giving attention but not expectation to the student.

Method

Subjects

The Ss were 43 eleventh-grade students with a past record of low achievement. Forty-eight students were originally available for the study, but, because of the large number of school dropouts within the group, 43 remained. These Ss had been assigned by the guidance department of the school to a special reading program designed to meet the needs of students with the poorest performance in scholastic activities. Students reading only on a third- to fourth-grade level were common in this group. The mean "Language" IQ score, determined by the California Test of Mental Maturity administered during the semester of the experiment, was 80.78, with a range of 53-104. The six Ss who were, in the opinion of the teacher, the most highly motivated were randomly assigned to each of the six treatment groups. The remaining Ss were then randomly assigned to one of the respective experimental treatment groups.

Six treatment groups were formed from all possible combinations of three types of expectancy statements (high, neutral or low) and two types of feedback (HN), High expectancy Positive feedback (HP), Neutral expectancy Negative feedback (NeuN), Neutral expectancy Positive feedback (NeuP), Low expectancy Negative feedback (LN), and Low expectancy Positive feedback (LP).

Design

The design for this study was a 2 x 3 factorial design with the type of feedback as one dimension and the type of expectancy statement as the other. Figure 1 presents the experimental design.

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Insert Figure 1 about here

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Materials

Materials that the Ss would have been using as a regular part of their classroom assignments were chosen for use in the study in an effort to maintain a regular, meaningful classroom situation. The materials were part of a series of thirty-three lessons, each of which contained a short reading selection followed by approximately twenty-five comprehension questions. The materials were available from bins at the rear of the room, and Ss completed them at their own rate.

Procedure

The classes met for a 45-minute period each afternoon. They were conducted by the regular teacher and teacher's aide and followed the regular routine used within those classes. At no time were the Ss aware that they were involved in a study. The teacher had very limited knowledge of the nature of the study in order to eliminate the possibility that she might unintentionally become a confounding variable by varying her normal behavior. The teacher's aide assumed the role of the experimenter (E) and administered the designated expectancy statements and feedback to the Ss assigned to receive them. Examples of expectancy and feedback statements used are given below:

High Expectancy

I think you can do better than most.

I think you will do very well on this lesson.

Neutral Expectancy

What lesson are you doing?

How many lessons have you completed?

Low Expectancy

I think you will have difficulty doing this.

I believe this lesson will be difficult for you.

Positive Feedback

You did an excellent job on the last lesson.

You did very well on yesterday's lesson.

Negative Feedback

You did very poorly on yesterday's lesson.

You are not doing a good job on your lessons.

On the first day all Ss were instructed in the technique of completing the lessons and were told to work at their own rate but that all units must eventually be completed. When a lesson was completed, it was to be handed to E and the next lesson picked up from the bins at the rear of the room.

On the next day, E moved throughout the room administering the assigned statements to Ss and carefully limiting all other remarks to the answering of direct questions concerning the lessons. Each S received one expectancy and one feedback statement per day, the nature of the statement depending upon S's treatment group assignment, rather than upon his actual ability or performance. Since numerical scores made on the lessons were not available to the Ss, E's statements provided the only feedback. Because the statements were administered on an individual basis, it was possible to make certain that each S received the same amount of treatment for the ten days of the experimental period.

Evaluation of the treatment effects was made on the basis of the number of units completed and the performance on those units.

Results

A 3 x 2 analysis of covariance, using past performance (GPA during previous three grading periods) in a reading class as the covariate, was carried out to determine if there was a significant difference in the mean scores on units completed as a function of expectancy statements, feedback statements or the interaction of the expectancy and feedback statements. The results of this analysis are presented in Table 1.

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Insert Table 1 about here

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As can be observed in Table 1, the means for the various experimental groups did not differ significantly as a function of teacher expectancy statements or teacher feedback statements. However, differences among means were observed as a function of the interaction of expectancy and feedback conditions ($F = 8.16$, $df = 2/36$, $p<.01$).

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Insert Table 2 about here

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The means correct for each group are shown in Table 2. A Newman-Keuls posttest of all pairwise differences between means indicated that the performance of the LP group was significantly different from that of the NeuP and LN groups ($p<.05$), and also from that of the HP and NeuP groups ($p<.10$). The LP group scored the highest of all groups. Figure 1 shows the significant comparisons and Figure 2 represents the differences graphically.

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Insert Figure 2 about here

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Insert Figure 3 about here

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A second 3 x 2 analysis of covariance on number of units completed, using past performance in a reading class as the covariate, also revealed a significant interaction of Expectancy statements x Feedback statements ($F = 4.6747$, $df = 2$, $p<.025$). The main effects of Expectancy statements or Feedback statements were not significant (see Table 3).

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Insert Table 3 about here

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The adjusted means of the number of units completed are shown in Table 4. A Newman-Keuls test of pairwise comparisons of these means revealed that the number of units completed by the NeuN group was significantly different from the LN group, and NeuP group, the HP group, and the HN group ($p<.05$) and also from the NeuN group ($p<.10$). In all cases the NeuN group completed a smaller number of units than any of the other groups.

Figures 4 and 5 present the differences of the interaction and a graphic representation of the differences, respectively.

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Insert Figure 4 about here

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Insert Figure 5 about here

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Discussion

A major objective of this study was to test the premises of the Moore et al. (1972) study on a different population and in a naturalistic school setting. The fact that a significant interaction of expectancy and feedback was observed for both number correct and number of units completed while no main effects were found provides support for the previous study and extends its external validity.

The hypothesis that teacher verbal attention, rather than expectancy *per se*, might account for expectancy effects was entertained by the inclusion of neutral statement control groups. These groups did not perform at a high level under either type of feedback. Clearly, then, the interpretation of the interaction of expectancy and feedback must include some reference to specific qualities of expectancy rather than to a general teacher attention variable.

The two groups that performed at the highest level were the low expectancy positive feedback group and the high expectancy negative feedback group. It can be argued that these two groups were the only two to receive both a stimulus to exert effort and reinforcement for that effort. For the low expectancy positive feedback group, the low expectation stimulated effort by making the task appear difficult and the positive feedback then reinforced that effort. In the high expectancy negative feedback group, the negative feedback, once received, made the task seem difficult thus causing increased effort. The high expectancy then secondarily reinforced *S* by indicating that *S* could attain success at the task.

According to this argument, the low expectancy *E* group, i.e., the combined low expectancy positive and negative feedback groups, should show increased effort in the first day of the experiment, while the corresponding combined high expectancy *E* group should not. The results support this prediction.

On the first day, the two groups' performance differed from each other ($t = 2.47$, $df = 50$, $p<.05$) with the low expectancy group's mean being 87.48 and the high expectancy group's mean being 80.66. Further, while one would expect that the low expectancy positive feedback group should show increased effort on the first day of the experiment, the high expectancy negative feedback group should not show increased effort until after a negative feedback statement has been given, i.e., in the second day. Again, the results support the prediction. On the first day, the two groups' performance differed from each other ($t = 2.49$, $df = 29$, $p<.05$), with the low expectancy positive feedback group's Day 1 mean being 89.0 and the high expectancy negative feedback group's Day 1 mean being only 80.6. By Day 2, the mean scores for those two groups no longer differed significantly. Also, according to this interpretation, groups that receive either a stimulus to exert effort or reinforcement, but not both, should not show a sustained increase in effort, and again the results bear out this prediction. The high expectancy positive feedback group received no stimulus to increase effort since the task was made to seem easy, and the low expectancy negative feedback group received no reinforcement. Neither group differed from the control groups on performance.

How does this result for the interaction compare with the results obtained for low- and high-IQ high-achieving fourth graders? As in the present study, in the previous study also, the low expectancy positive feedback groups performed at a higher level than their no expectancy positive feedback controls, although the difference was not significant in the previous study--probably because of other more powerful effects operating in high-IQ and high-achieving students. Also, in the previous study, for high-IQ Ss only, the direction under negative feedback (high expectancy>no expectancy>low expectancy) was the same as that found in the present study, and the same interpretation was applied--

that is, a high expectation given in a negative feedback situation serves as a "discriminative cue" or "secondary reinforcer" causing effort to be maintained. In the previous study, the low-IQ high-achievers performed at a higher level given a low expectancy and negative feedback, a result opposite from the one obtained here. However, the anomalous discriminative cue value that a low expectancy statement holds for low-IQ high-achievers would not be expected to obtain in a low-IQ low-achieving group since the strength of a discriminative cue depends on the number of times it has been associated with success, and since for low achievers success occurs at a very low rate. Thus the two experiments seem to be theoretically consistent, but the present study highlights a function of expectancy statements that was not detected at a significant level in the previous study--that is, the function of changing a student's perception of difficulty and thus stimulating effort.

The measure of number of units completed reflects S's tendency to engage in the experimental task and thus is more sensitive to avoidance behavior than is the measure of performance. Since it was found that Ss in the neutral expectancy negative feedback group completed significantly fewer units than any other group, it appears that this group avoided the task more than the other groups. This result may be due to a punishing effect of negative feedback unmitigated by the incentive to continue trying provided by a positive expectancy statement.

But if this interpretation is correct, why didn't the low expectancy negative feedback group also show avoidance behavior? It seems likely that when a low expectancy is given, and therefore the task is perceived to be a difficult one, the punishing effect of negative feedback is not as great because S has an "excuse" for not doing well. When a neutral statement is given, however, no excuse in terms of task difficulty is provided and hence

the negative feedback is highly punishing.

Avoidance behavior in the study on high-achieving fourth graders was also greatest, for low-IQ Ss, under no expectancy negative feedback conditions, lending support to the reliability of the present result. For high-IQ Ss, however, avoidance was greatest under high expectancy positive feedback, low expectancy negative feedback, and high expectancy negative feedback conditions. Apparently, high-IQ high-achievers avoid tasks under different conditions than low-IQ high- or low-achievers.

To summarize, the present study has added to our knowledge of how expectancy interacts with feedback in a low achieving group by indicating that (1) when it is low, it stimulates effort by making a task seem difficult and (2) when it is high, it reinforces effort if negative feedback is being received. One implication of these interpretations is that under conditions where a teacher's statements are not credible expectancy will not have an effect (unless it has discriminative cue value that is independent of its surface meaning, as low expectancy does for low-IQ high-achievers). For example, for tasks in which S has a judgment of task difficulty that is independent of the teacher's expectation this judgment might override the expectancy where the two were discrepant. Based on present evidence, however, the implication for classroom teachers seems to be that the use of high expectancy statements in difficult tasks and low expectancy statements in easy tasks should improve performance and at the same time not affect adversely the students' approach behavior.

While the explanations given in this study would appear to be adequate to explain the interaction effects of teacher expectancy and feedback statements, a further effort has been made to develop a more abstract set of explanations which would subsume a variety of classroom procedures involving

the stimulation and reinforcement of increased effort, in addition to the experimental variables specified in this study.

The following is a two setp model which seems to be logically consistent with the findings of the present investigation yet should be applicable to a broader range of classroom instructional conditions.

1. Behavior acquired as a function of prior experience, when compared to the requirements of present conditions being experienced, will stimulate an increase in effort directed toward satisfying the present condition being experienced if (a) the acquired behaviors and the behaviors to be acquired are associated, (b) the behaviors associated with the present conditions are perceived as having not been achieved, and (c) if the behaviors to be acquired are perceived as achievable.

2. Under conditions where an increase in learner performance is a function of an increase in effort, reinforcement associated with increased performance will increase the probability that the increase in performance either to achieve or to avoid the task will be sustained. The reinforcement of performance resulting from "an existing level of effort will result in the maintaining of the existing level of performance."

If one can assume that this conceptual model is valid, it provides a common explanation for what had appeared to be a number of only generally related research findings and also provides a basis for deducing a number of hypotheses for further investigations. Specifically, it would not only tend to provide a common explanation for the Moore, et al. (1972) study and the present investigation but also serve as an alternate explanation for the findings of Berlyne and Frommer (1966) and their theory of epistemic curiosity and Festinger's (1972) theory of cognitive dissonance. Both investigators point to the notion that cognitive differences are prerequisites for the

occurrency dissonance. Our theory suggests some additional differences which make a difference. Not all differences do. Once the specific conditions for dissonance have been clarified, additional conditions for resolution can be stipulated under this theory.

Its ramifications for further research and classroom application would seem to be obvious. For example, it can be hypothesized that mediating questions may be used effectively to increase classroom performance by providing conditions whereby increased effort is stimulated and reinforced. Or it can be hypothesized that effort in solving mathematics problems may be increased by introducing problems which are perceived as difficult but possible, as a part of the instructional sequence, as problems which were originally perceived as difficult are acquired.

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Table 1

Analysis of Covariance: Scores on Units Completed

Source	df	MS	F
Expectancy (E)	2	24.7726	1.0079
Feedback (F)	1	1.2633	.0514
ExF	2	200.5588	8.1597*
Error	36	24.5791	

*p<.01

Table 2

Adjusted Means - Scores on Concepts Completed as a Function of the Expectancy and Feedback Interaction

Feedback	Expectancy		
	High	Low	Neutral
Positive	81.97	88.29	79.46
Negative	85.11	80.30	82.89

Table 3

Analysis of Covariance: Number of Units Completed

Source	df	MS	F
Expectancy (E)	2	1.0934	.0965
Feedback (F)	1	.5300	.0468
EXF	2	52.9882	4.6747*
Error	36	11.3351	

*p<.025

Table 4

Adjusted Means - Number of Units Completed as a Function of the Expectancy and Feedback Conditions

Feedback	Expectancy		
	High	Low	Neutral
Positive	15.63	14.35	16.33
Negative	15.17	16.41	11.54

Figure 1

Experimental Design

	High Expectancy Statement	Neutral Expectancy Statement	Low Expectancy Statement
Positive Feedback			
Negative Feedback			

Figure 2

Differences in Mean Scores in Units Completed as a Function of the Interaction of Expectancy and Feedback Conditions

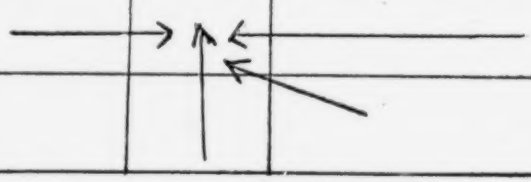
Feedback	Expectancy		
	High	Low	Neutral
Positive			
Negative			

Figure 3

Mean Achievement on Units Completed as a Function of Expectancy and Feedback Conditions

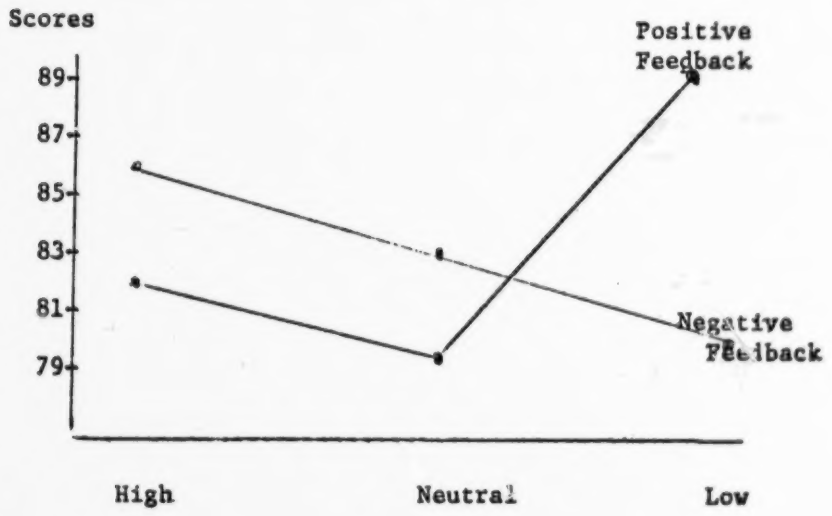


Figure 4

Differences in Mean Number of Units Completed as a Function of Expectancy and Feedback Conditions

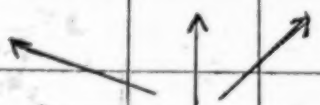
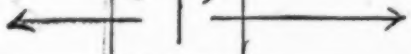
Feedback	Expectancy		
	High	Low	Neutral
Positive			
Negative			

Figure 5

Differences--Mean Number of Units Completed as a Function of Expectancy and Feedback Conditions